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MINERAL INDUSTRY SURVEYS

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NICKEL IN NOVEMBER 1997

Reported domestic nickel consumption in November, on a daily average basis, was 4% less than that of October, according to the U.S. Geological Survey. Daily usage by the stainless steel industry was down 5% from the October average of 113 metric tons (t). Sales to plating companies averaged 42 t per day, 12% less than in October. Consumption of elemental nickel to make nickel-base corrosion resistant alloys was unchanged. U.S. consumer stocks of cathode, briquets, and powder declined to 4,260 t and were down 31% from the 9-month high of 6,190 t reported for September 30. Stocks in London Metal Exchange warehouses leveled off at 66,000 to 67,000 t after reaching a 2-year high of 66,960 t on October 31. Percentages reported in this paragraph may not be verifiable owing to concealment of company proprietary data. Imports of primary nickel for January-October 1997 totaled 122,000 t, about 2% more than the tonnage for the first 10 months of 1996. Trade data for November will appear in a subsequent issue.

Outokumpu locks up future supplies of nickel concentrate and matte from Australia, Brazil, and Russia for its Harjavalta smelting and refining complex

Australia.—On October 21, 1997, Outokumpu Base Metals Oy became the sole owner of the Honeymoon Well project in Western Australia, buying out its partner—Rio Tinto Exploration Pty. Limited. Rio Tinto Exploration already had agreed on September 3 to sell its 65% interest in the project to Outokumpu, but various government approvals had to be obtained before the sale could proceed to settlement. Outokumpu also acquired Rio Tinto's interests in the nearby Barrack, Capital and Wiluna Nickel joint ventures (Outokumpu Oyj, 1997a and c). The project will be managed by the company's local subsidiary, Outokumpu Mining Australia Pty. Limited.

The Honeymoon Well deposit is in the Shire of Wiluna, about 60 kilometers northwest of the giant Mount Keith Mine

owned by WMC Limited. According to Outokumpu, the Honeymoon Well deposit has 118 million tons of indicated resources, averaging 0.8% nickel at a cut-off grade of 0.5% nickel. An additional 10 million tons of resources, averaging 0.7% nickel, are inferred. The nickel is in the form of disseminated sulfides and would be recovered using bulk mining techniques similar to those employed at the Mount Keith Mine.

Outokumpu and Rio Tinto began jointly exploring the Honeymoon Well area in 1989. Advanced feasibility studies of the deposit have been underway since 1996. The proposed open-pit mining operation would produce about 30,000 t per year of nickel in concentrate. Development is expected to cost about A\$400 million (US\$290 million). The concentrates would most likely be exported to Outokumpu's Harjavalta nickel smelting and refining complex in Finland. Harjavalta is already receiving concentrates from Mount Keith and Outokumpu's own Forrestania Mine near Varley, southwest of Kambalda. The new Silver Swan Mine northeast of Kalgoorlie began shipping concentrates to Harjavalta in June 1997. The Silver Swan is jointly owned by Outokumpu and Mining Project Investors Pty. Limited of Australia.

Brazil.—The refinery at Harjavalta will be receiving about 10,000 t of nickel in matte annually from Mineração Serra da Fortaleza (Mining Journal, 1997). The Brazilian company recently began operating a new nickel mining and smelting complex in the State of Minas Gerais. The company is an associate of RTZ Mineração Ltda., a wholly-owned subsidiary of giant Rio Tinto plc. Under the terms of the purchase agreement, shipments of matte will begin in 1998 and continue for at least 10 years. The 10,000 t per year of nickel in matte represents the entire planned output of the Fortaleza operation.

The Fortaleza smelter was commissioned in December 1997 and is expected to reach the 10,000-t-per-year production rate by April 1998. The project has cost \$233 million to date. The mine reportedly has 10.4 million t of reserves of sulfide ore,

averaging 1.68% nickel, 0.33% copper, and 0.04% cobalt, and should have a life of more than 20 years (Mining Journal, 1997). During the first 5 years, the ore will come from an open pit mine. An underground mine would be constructed at some point during the 5-year period to recover the deposit's deeper ores. In 2003, the operation would switch over to underground mining. The concentrator is designed to treat 550,000 tons per year of ore. A refinery was to have been built onsite, but this part of the project has been postponed indefinitely.

Outokumpu was heavily involved in the design and start-up of the Fortaleza smelter. In October 1995, Outokumpu licensed its new proprietary Direct Nickel Smelting Technology to the Fortaleza de Minas project and agreed to help design and engineer the smelter's flash furnace. In March 1996, the licensing agreement was updated and expanded to cover construction supervision, start-up assistance, and training (Outokumpu Oyj, 1996).

Russia.—Outokumpu recently formed a joint venture with RAO Norilsk Nickel to evaluate a number of mines and resources currently controlled by Norilsk in the Pechenga area of the Kola Peninsula. Over the next 18 months, the new venture—A/O Polar Mining—will determine if it makes economic sense for Outokumpu and Norilsk to jointly upgrade some of Norilsk's existing mining and concentrating operations on the peninsula. A/O Polar Mining also will explore the possibility of developing new mines in both the Pechenga and Monchegorsk regions. The feasibility study will focus on different ways of lowering mining and mineral dressing costs while simultaneously meeting the most stringent environmental standards accepted by the international community. The study also will investigate alternative sources of financing.

Two subsidiaries manage Norilsk's assets on the Kola Peninsula. A/O GMK Pechenganikel is responsible for the mines, concentrator and roaster at Zapolyarny as well as the mine and copper-nickel smelter at Nikel. A/O GMK Severonikel manages the copper-nickel-cobalt smelting and refining complex at Monchegorsk.

To date, 14 copper-nickel deposits have been discovered in the Pechenga-Allarechenskiy region, giving Pechenganikel a minimum of 60 years of reserves (Blatov and Sokolov, 1996). The Kaula deposit, one of several resources identified during the 1930's and 1940's, was the first to be mined. In 1947, the

largest of the 14 deposits was discovered—the Zhdanovskiy. Development of the Zhdanovskiy deposit took place between 1951 and 1965, increasing reserves in the region six-fold. Two medium-sized deposits—Kotselvarra-Kammikivi and Semiletka—were also developed during the 1960's. Other key deposits (with their years of discovery shown in parentheses) include: Bystrinskiy (1978-86), Sputnik (1973-77), Tundrovoy (1985-90), and Zapolyarny (1968). Bystrinskiy, Sputnik, and Tundrovoy are all being held in reserve. Four mines are currently in production: the Central and Western open pits in the upper part of the Zhdanovskiy deposit, the neighboring Northern underground operation in the Zapolyarny deposit, and the Kaula-Kotselvarra underground operation in the Kotselvaara-Kammikivi and Semiletka deposits. The ores of the Nittis-Kumuzhye deposit and related reserves in the Monchegorsk region were depleted during the 1960's and 1970's.

Outokumpu Technology was recently involved in the modernization of the Zapolyarny concentrator. Outokumpu is also helping Norilsk Nickel reline and upgrade one of two Outokumpu-designed flash furnaces at the Nadezhdinskiy smelter of the A/O Norilsk Combine in north-central Siberia.

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TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE 1/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
1996:					
November	5,700	1,340	365	7,400	91,200
December	5,690	1,650	181	7,520	98,700
January-December	78,100	17,600	2,980	98,700	XX
1997:					
January	7,240	2,000	102	9,340	9,340
February	6,290	1,510	130	7,930	17,300
March	6,070	1,580	254	7,910	25,200
April	6,800	1,490	570	8,860	34,000
May	6,920	1,300	405 r/	8,620	42,700
June	7,270 r/	1,280	455 r/	9,000 r/	51,700 r/
July	6,910	1,640	293 r/	8,840	60,500 r/
August	6,380	1,460	204 r/	8,040	68,500 r/
September	5,970 r/	1,470	300 r/	7,740 r/	76,300 r/
October	6,680 r/	1,540	325 r/	8,550 r/	84,800 r/
November:					
Steel:					
Stainless and heat resisting	1,930	1,290	W	3,220	39,200
Alloy (excludes stainless)	334	W	W	334	6,800
Superalloys	1,030	--	W	1,030	10,900
Copper-nickel alloys	W	W	W	W	W
Electrical, magnetic, and expansion alloys	W	--	--	W	W
Other nickel & nickel alloys	1,290	--	W	1,290	15,700
Cast iron	W	--	W	W	W
Electroplating (sales to platers)	1,250	--	W	1,250	14,000
Chemical and chemical uses	W	--	W	W	W
Other uses	483	81	243	807	6,250
Total reported	6,320 2/	1,370	243	7,930	92,800
Total all companies (calc) 3/	XX	XX	XX	12,000	140,000
1997: January-November	72,800	16,600	3,280	92,800	XX
1996: January-November	72,400	15,900	2,800	91,200	XX

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of consumption, 5,360 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

3/ Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (66.21%) to apparent primary consumption for 1996.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS,
BY FORM AND USE 1/ 2/

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
1996:				
November	6,170	625	64	6,860
December	4,990	1,540	78	6,610
1997:				
January	4,460 r/	659	57	5,180 r/
February	4,070 r/	231	182	4,480 r/
March	4,120 r/	240	605	4,960 r/
April	3,870 r/	366	634	4,870 r/
May	3,370 r/	344	580 r/	4,290 r/
June	4,000 r/	389	294 r/	4,680 r/
July	4,740 r/	383	125 r/	5,250 r/
August	5,200	286	155 r/	5,640 r/
September	6,190 r/	447	152 r/	6,790 r/
October	5,380 r/	271	131 r/	5,780 r/
November:				
Steel (stainless, heat resisting and alloy)	2,450	190	(3/)	2,640
Nonferrous alloys 4/	1,610	--	(3/)	1,610
Foundry (cast irons)	(3/)	--	(3/)	(3/)
Chemical (catalysts, ceramics, plating salts, etc.) and unspecified uses	196	--	131	327
Total	4,260	190	131	4,580

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustment.

3/ Included in "Chemical and unspecified uses" category.

4/ Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE 1/

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap	Ferrous scrap 2/	Nonferrous scrap 3/	Total scrap
1996:						
November	3,250	785	4,030	3,630	89	3,720
December	3,320	656	3,970	3,510	88	3,600
January-December	43,400	9,980	53,400	XX	XX	XX
1997:						
January	4,800	847	5,650	3,160	116	3,280
February	3,880	806	4,690	3,290	115	3,410
March	4,250	1,010	5,260	4,090	106	4,190
April	5,260	791	6,060	3,820	114	3,940
May	4,750	843	5,590	3,790	115	3,900
June	4,770	758	5,520	3,900	113	4,020
July	5,190	828	6,020	3,380	116	3,490
August	3,780	762	4,540	3,930	116	4,040
September	3,910	776	4,690	3,710	110	3,820
October	4,440	847 r/	5,290 r/	4,030	118	4,150
November	4,070	640	4,710	4,090	113	4,200
1997: January-November	49,100	8,910	58,000	XX	XX	XX
1996: January-November	40,100	9,320	49,400	XX	XX	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

3/ Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of origin	Cathodes, pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
October	7,850	779	1,050	60	581	373	311	11,000	125,000	67
November	9,820	670	1,520	99	328	308	290	13,000	138,000	38
December	9,180	815	969	21	351	275	251	11,900	150,000	61
January-December	113,000	9,690	16,000	463	4,270	3,790	3,270	150,000	XX	636
1997:										
January	7,640	954	1,180	111	364	263	265	10,800	10,800	57
February	9,310	945	1,180	395	696	392	242	13,200	23,900	53
March	14,500	1,130	1,070	277	544	342	198	18,100	42,000	73
April	7,920	948	1,050	347	572	433	294	11,600	53,600	78
May	13,900	838	1,420	217	370	469	297	17,500	71,100	99
June	5,240	625	1,240	49	482	511	256	8,400	79,500	40
July	8,190	520	1,280	10	643	529	271	11,400	90,900	82
August	10,800	752	956	172	334	359	230	13,600	105,000	111
September	11,100	907	1,090	90	455	378	205	14,200	119,000	84
October:										
Australia	1,090	120	--	--	--	--	--	1,210	11,100	--
Canada	4,670	661	--	20	203	190	20	5,760	49,900	(5/)
Colombia	--	--	100	--	--	--	--	100	1,230	--
Dominican Republic	--	--	685	--	--	--	--	685	6,580	--
Finland	178	78	--	--	--	--	12	268	4,150	--
France	100	--	100 6/	--	70	1	9	280	2,650	--
Germany	--	(5/)	1	--	10	--	32	43	674	55
Japan	--	(5/)	--	--	22	3	190	215	903	9
New Caledonia	--	--	--	--	--	--	--	--	2,640	--
Norway	273	--	--	--	7	--	--	280	19,300	--
Russia	1,940	18	--	--	--	--	--	1,960	21,900	--
South Africa	203	--	--	--	--	--	--	203	690	--
United Kingdom	18	9	--	(5/)	191	--	31	249	2,570	4
Zimbabwe	100	--	--	--	--	--	--	100	1,300	--
Other	18 6/	79	55	--	57	209	141	559	5,090	2
Total	8,590	966	942	21	559	403	437	11,900	131,000	71
1997: January-October	97,200	8,580	11,400	1,690	5,020	4,080	2,690	131,000	XX	748
1996: January-October	93,900	8,210	13,500	344	3,600	3,200	2,720	125,000	XX	536

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ Less than 1/2 unit.

6/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY 1/

(Metric tons, nickel content 2/)

Period and country of destination	Cathodes, pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total 3/	Total year to date 4/	Wrought nickel
1996:										
October	20	79	359	420	1,280	2,270	185	4,620	38,800	63
November	19	88	324	517	918	1,610	197	3,670	42,500	59
December	21	75	433	393	960	1,850	551	4,280	46,800	21
January-December	586	1,060	3,330	4,210	10,900	22,800	3,940	46,800	XX	439
1997:										
January	20	72	442	513	862	1,740	455	4,100	4,100	56
February	39	114	416	134	1,000	1,690	515	3,920	8,020	89
March	26	93	616	172	1,210	1,280	488	3,880	11,900	61
April	33	84	725	148	1,480	2,740	684	5,890	17,800	158
May	29	102	913	124	1,290	1,610	439	4,510	22,300	58
June	52	97	900	172	963	3,540	258	5,990	28,300	56
July	19	55	661	165	676	2,970	428	4,970	33,300	109
August	28	63	491	103	726	3,210	676	5,300	38,600	50
September	211 5/	39	344	168	1,190	2,660	421	5,030	43,600	79
October:										
Australia	--	--	--	--	--	--	--	--	79	--
Belgium	--	7	--	--	--	34	8	49	484	1
Canada	--	12	--	39	398	293	61	803	10,500	3
Germany	--	4	--	(6/)	58	24	6	91	677	(6/)
India	--	--	262	--	--	4	(6/)	267	1,990	--
Italy	--	(6/)	--	--	--	--	--	(6/)	96	1
Japan	--	4	198	--	90	608	90	990	4,720	--
Korea, Republic of	--	4	--	--	--	806	2	813	7,000	36
Mexico	1	7	5	(6/)	--	1	31	45	4,540	16
Netherlands	--	(6/)	--	--	54	60	3	118	463	--
Spain	--	3	--	--	--	216	--	219	3,920	--
Sweden	--	1	--	--	332	--	(6/)	333	2,310	--
Taiwan	--	(6/)	347	--	--	556	7	910	6,630	(6/)
United Kingdom	1	1	1	--	12	5	(6/)	19	380	2
Other	--	9	--	64	10	85	102	273	4,710	4
Total	2	54	812	103	956	2,690	312	4,930	48,500	63
1997: January-October	458	774	6,320	1,800	10,400	24,100	4,680	48,500	XX	779
1996: January-October	546	897	2,570	3,300	9,000	19,300	3,190	38,800	XX	359

XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemical category includes chlorides (25%), sulfates (22%), and other salts (22%), supported catalysts (22%), and oxide, sesquioxide and hydroxide (65%).

3/ Excludes wrought nickel.

4/ May include revisions for prior months.

5/ All or part of these data have been referred to the Bureau of the Census for verification.

6/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date 2/
1996:									
October	249	151	120	90	(3/)	72	60	741	8,540
November	349	161	168	81	(3/)	66	29	854	9,390
December	151	178	256	145	(3/)	48	64	843	10,200
January-December	2,780	2,110	1,810	1,520	2	832	1,190	10,200	XX
1997:									
January	208	132	196	98	--	100	108	841	841
February	181	202	190	149	--	96	107	926	1,770
March	265	184	266	90	(3/)	117	52	974	2,740
April	234	186	283	139	--	298	61	1,200	3,940
May	457	148	290	190	1	103 r/	56	1,250	5,190
June	431	190	346	150	3	133 r/	68	1,320	6,510
July	463	224	283	247	(3/)	186	66	1,470	7,980
August	336	216	251	143	(3/)	363	36	1,350	9,320
September	266	183	232	174	1	202	93	1,150	10,500
October:									
Australia	92	--	--	--	--	(3/)	--	92	1,660
Belgium	1	--	--	--	--	--	--	1	131
Canada	81	--	6	(3/)	--	3	3	93	562
France	--	5	100	31	--	--	(3/)	136	906
Germany	2	68	75	152	--	69	19	384	2,880
Italy	--	17	--	(3/)	--	--	--	17	686
Japan	2	--	4	2	--	28	2	37	849
Mexico	--	--	--	--	--	--	--	--	5
Netherlands	--	--	--	--	--	11	(3/)	11	123
South Africa	18	--	--	--	--	--	--	18	333
Sweden	--	--	133	--	--	2	(3/)	135	1,470
United Kingdom	27	40	(3/)	1	--	7	2	77	1,000
Other	125	2	(3/)	--	(3/)	(3/)	21	149	1,010
Total	346	132	318	186	(3/)	120	47	1,150	11,600
1997: January-October	3,190	1,800	2,660	1,570	4	1,720	695	11,600	XX
1996: January-October	2,280	1,770	1,380	1,290	2	718	1,090	8,540	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY 1/

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods, and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total 2/	Total year to date 2/
1996:									
October	602	240	147	600	12	49	394	2,040	19,400
November	485	340	113	725	5	74	276	2,020	21,400
December	478	191	119	971	9	146	129	2,050	23,500
January-December	5,710	3,210	1,560	8,000	200	1,270	3,520	23,500	XX
1997:									
January	541	320	115	838	10	91	120	2,030	2,030
February	641	222	137	554	20	136	180	1,890	3,930
March	425	334	152	845	23	99	597	2,480	6,400
April	344	225	224	649	14	90	374	1,920	8,320
May	262	290	212	810	15	81	146	1,820	10,100
June	357	319	195	781	11	131	686	2,480	12,600
July	293	193	229	525	19	114	439	1,810	14,400
August	320	246	269	699	8	131	239 r/	1,910	16,300
September	269	280	221	714	26	103	154	1,770	18,100
October:									
Australia	--	(3/)	(3/)	188	--	--	--	189	1,120
Belgium	--	(3/)	(3/)	6	--	--	--	6	186
Canada	24	46	56	41	11	47	49	274	2,900
France	224	80	3	1	--	(3/)	46	355	2,200
Germany	42	34	15	15	--	1	(3/)	108	746
India	--	5	--	--	--	(3/)	(3/)	6	19
Ireland	--	--	38	1	--	--	(3/)	39	442
Italy	20	(3/)	2	98	--	4	3	127	1,170
Japan	33	--	4	102	--	4	3	145	1,790
Korea, Republic of	(3/)	3	5	92	--	8	4	111	975
Mexico	--	1	58	23	1	9	24	116	709
Netherlands	13	23	(3/)	19	--	(3/)	(3/)	55	467
Singapore	--	4	(3/)	(3/)	--	--	(3/)	5	166
Spain	--	1	(3/)	1	--	(3/)	--	2	74
Sweden	--	--	(3/)	6	6	--	--	12	153
Switzerland	3	2	1	4	--	1	7	18	144
Taiwan	1	--	3	(3/)	--	(3/)	1	6	341
United Kingdom	74	119	30	114	3	19	4	362	3,830
Other	52	30	3	25	(3/)	11	53	176	2,790
Total	486	348	218	736	21	104	194	2,110	20,200
1997: January-October	3,940	2,780	1,980	7,150	167	1,080	3,130	20,200	XX
1996: January-October	4,750	2,680	1,330	6,310	186	1,050	3,110	19,400	XX

r/ Revised. XX Not applicable.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ May include revisions for prior months.

3/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
November 1997:		
Stainless and heat resisting steels	97	3
Alloy steels	100	(1/)
Superalloys	77	23
Copper-nickel alloys	99	1
Other nickel-base alloys	100	(1/)

1/ Less than 1/2 unit.

TABLE 9
NICKEL PRICES

Date	Cathode NY Dealer \$/lb.	LME Cash \$/t	LME Cash \$/lb.	18/8 Stainless steel scrap Pittsburgh \$/long ton(gw)
1997:				
Average for the month of:				
October	2.973	6,380.326	2.894	770
November	2.883	6,139.500	2.785	750
December	2.784	5,945.357	2.697	750
For week ending:				
October 3	3.11-3.23	6,740.500	3.057	765-775
October 10	3.06-3.11	6,550.000	2.971	765-775
October 17	2.98-3.04	6,422.500	2.913	765-775
October 24	2.90-3.05	6,289.000	2.853	765-775
October 31	2.87-2.96	6,091.000	2.763	765-775
November 7	2.86-2.90	6,092.500	2.764	745-755
November 14	2.88-2.99	6,191.500	2.808	745-755
November 21	2.88-2.91	6,102.500	2.768	745-755
November 28	2.92-2.93	6,171.500	2.799	745-755
December 5	2.78-2.92	5,978.000	2.712	745-755
December 12	2.79-2.90	6,018.500	2.730	745-755
December 19	2.80-2.92	5,892.000	2.673	745-755
December 26	2.77-2.90	5,870.833	2.663	745-755

Sources: Platt's Metals Week and American Metal Market.